

Table of Contents

Credits and Acknowledgements	iii
Executive Summary	1
Chapter 1. General Introduction	3
<i>Introduction</i>	3
<i>Background</i>	3
<i>Receiving Waters Monitoring</i>	4
<i>Literature Cited</i>	5
Chapter 2. Oceanographic Conditions	9
<i>Introduction</i>	9
<i>Materials and Methods</i>	9
<i>Results and Discussion</i>	11
<i>Summary and Conclusions</i>	18
<i>Literature Cited</i>	19
Chapter 3. Microbiology	21
<i>Introduction</i>	21
<i>Materials and Methods</i>	21
<i>Results and Discussion</i>	23
<i>Summary and Conclusions</i>	28
<i>Literature Cited</i>	28
Chapter 4. Sediment Characteristics	31
<i>Introduction</i>	31
<i>Materials and Methods</i>	31
<i>Results and Discussion</i>	33
<i>Summary and Conclusions</i>	37
<i>Literature Cited</i>	40
Chapter 5. Macrobenthic Communities	43
<i>Introduction</i>	43
<i>Materials and Methods</i>	43
<i>Results and Discussion</i>	45
<i>Summary and Conclusions</i>	52
<i>Literature Cited</i>	55

Table of Contents

(continued)

Chapter 6. Demersal Fishes and Megabenthic Invertebrates	59
<i>Introduction</i>	59
<i>Materials and Methods</i>	59
<i>Results and Discussion.....</i>	60
<i>Summary and Conclusions</i>	67
<i>Literature Cited</i>	68
Chapter 7. Bioaccumulation of Contaminants in Fish Tissues	71
<i>Introduction</i>	71
<i>Materials and Methods</i>	71
<i>Results and Discussion</i>	73
<i>Summary and Conclusions</i>	76
<i>Literature Cited</i>	77
Glossary	81
Appendices	
<i>Appendix A: Supporting Data — Microbiology</i>	
<i>Appendix B: Supporting Data — Sediment Characteristics</i>	
<i>Appendix C: Supporting Data — Demersal Fishes and Megabenthic Invertebrates</i>	
<i>Appendix D: Supporting Data — Bioaccumulation of Contaminants in Fish Tissues</i>	

Credits and Acknowledgments

CITY OF SAN DIEGO ANNUAL RECEIVING WATERS MONITORING REPORT FOR THE POINT LOMA OCEAN OUTFALL 2008

Technical Editors

Ami Groce Tim Stebbins

Production Editors

Nick Haring Andy Davenport Ami Groce

GIS Graphics

Maiko Kaysua Dawn Olson Diane O'Donohue

Executive Summary

Tim Stebbins Ami Groce

Chapter 1. General Introduction

Tim Stebbins Ami Groce

Chapter 2. Oceanographic Conditions

Dan Ituarte Robin Gartman

Chapter 3. Microbiology

Andrew Davenport Dan Ituarte

Chapter 4. Sediment Characteristics

Ami Groce Robin Gartman

Chapter 5. Macrobenthic Communities

Nick Haring

Chapter 6. Demersal Fishes & Megabenthic Invertebrates

Ami Groce Robin Gartman

Chapter 7. Bioaccumulation of Contaminants in Fish Tissues

Ami Groce Robin Gartman

Cover Photo: Common dolphin, *Delphinus delphis*. Photo by Nick Haring.

Acknowledgments: We are grateful to the personnel of the City's Marine Biology Laboratory for their assistance in the collection and processing of all samples and for discussions of the results. The completion of this report would not have been possible without their continued efforts and contributions. We would also like to acknowledge the City's Microbiology and Wastewater Chemistry laboratories for providing the bacteriological and chemistry data analyzed herein.

CITY OF SAN DIEGO OCEAN MONITORING PROGRAM

Alan C. Langworthy
Deputy Metropolitan Wastewater Director
Environmental Monitoring and Technical Services Division

Marine Biology & Ocean Operations

Timothy Stebbins
Senior Marine Biologist

John Byrne	Andrew Davenport	Timothy Douglass
Ross Duggan	Adriano Feit	Robin Gartman
Ami Groce	David Gutoff	Nick Haring
Daniel Ituarte	Michael Kelly	Maiko Kasuya
Kathy Langan-Cranford	Megan Lilly	Richard Mange
Ricardo Martinez-Lara	Diane O'Donohue	Dawn Olson
Veronica Rodriguez-Villanueva	Wendy Storms	Ron Velarde
Lan Wiborg		

Marine Microbiology / Vector Management

Ric Amador
Senior Biologist

George Alfonso	Roxanne Davis	André Macedo
Nester Malibago	Laila Othman	Zaira Rodriguez
Sonji Romero	Aaron Russell	Rumana Shahzad
Joseph Toctocan	Zakee Shabazz	

How to cite this document: City of San Diego. (2008). Annual Receiving Waters Monitoring Report for the Point Loma Ocean Outfall, 2007. City of San Diego Ocean Monitoring Program, Metropolitan Wastewater Department, Environmental Monitoring and Technical Services Division, San Diego, CA.